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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/040,469 | 01/09/2002 | David B. Layzell | 1998-016-08US | 2590 |

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PARTEQ Innovations
Biosciences Complex
Room 1625
Queen's University
Kingston, ON K7L 3N6
CANADA

EXAMINER

GELLNER, JEFFREY L

ART UNIT

PAPER NUMBER

3643

DATE MAILED: 01/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,469

Applicant(s)

LAYZELL ET AL.

Examiner

Jeffrey L. Gellner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 22 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 6, 7, 16, 18, 19 and 24 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5, 8-15, 17, 20, 21 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). 10.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Acknowledgement is made of Applicant's IDS entered 26 June 2002.

Election/Restrictions

Applicant's election with traverse of invention I in Paper No. 27 November 2002 is acknowledged. The traversal is on the ground(s) that (1) all claims relate to a method of enhancing plant growth or yield (Response middle of page 2), and (2) the Examiner's alternative use is outside the scope of the claimed invention (Response middle of page 2). This is not found persuasive. As to argument (1), restriction is proper where claimed inventions are able to support separate patents and they are either independent or distinct (MPEP § 803). Examiner considers the inventions to be distinct and capable of supporting separate patents because, in essence, one invention goes toward treating soil with hydrogen gas and the other invention goes toward treating soil with an extract from soil. The Applicant's goal is not of issue. As to argument (2) the burden on the Examiner is to cite an alternative use (MPEP § 803 - Guidelines). This use need not be within the ambit envisioned by Applicant. The requirement is still deemed proper and is therefore made FINAL.

With the preamendment Invention I includes claims 1-21, 24, and 25. Claims 22 and 23 are withdrawn from examination.

Drawings

The drawings are objected to because in Figs. 1 and 2 the units of the X axis ("% of Air") imply that the H₂ treatment reduces plant growth. Perhaps, the units should be --% greater than

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Air--. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

In Table 1, p value column under "Shoot," there appears to be an extra value ".000341" in the "Garden Air" row.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 6, 7, 16, 18, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Atmosphere in view of Buckman et al.

As to Claims 1, 4, and 6, Atmosphere discloses that the natural atmosphere of the earth contains H₂ gas (page 2) at ground level. Not disclosed is the soil being exposed H₂ gas and a plant growing in the soil. Buckman et al., however, discloses the soil being exposed to H₂ gas ("being a mixture of gases, the air moves into those soil pores not occupied by water" of page 14 lines 17 and 18 of text) and a plant growing in the soil (Fig. 1:6). It would have been obvious to

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one of ordinary skill in the art at the time of the invention to modify the atmosphere of Atmosphere by having it move into soil pores where plants are growing as it is a natural process of the earth. The atmosphere of Atmosphere as modified by Buckman et al. inherently performs the method steps recited in Claim 1.

As to Claim 7, the limitations of Claim 1 are disclosed as described above. Not disclosed is the production of H_2 gas by electrolysis. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the method of Atmosphere as modified by Buckman et al. by having the H_2 gas generated by electrolysis as an event naturally occurring with lightning or biologically on the earth.

As to Claim 16, the limitations of Claim 1 are disclosed as described above. Not disclosed is placing the soil in a container that minimizes the diffusion of H_2 and applying H_2 to the container. Examiner takes official notice that it is old and notoriously well known in the horticultural arts to grow plants in plastic pots (inherently minimize diffusion of H_2) with open tops (exposed to atmosphere). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the method of Atmosphere as modified by Buckman et al. by growing plants in plastic pots for ease of plant husbandry.

As to Claim 18, the limitations of Claim 1 are disclosed as described above. Not disclosed is providing the H_2 gas by hollow probes. Examiner takes official notice that it is old and notoriously well known in the agricultural arts to use drainage tile (defining drainage tile as hollow probes) in agricultural fields (the air in the tiles would inherently contain H_2 .) It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify

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the method of Atmosphere as modified by Buckman et al. by growing plants in a field with drain tiles to promote soil drainage.

As to Claim 19, the limitations of Claim 1 are disclosed as described above. Not disclosed is the exposed soil to H₂ enhancing the ability of soil microbes to oxidize H₂ and wherein the enhanced ability of the soil microorganism potentiates enhanced plant growth or yield. Examiner takes official notice that it is old and notoriously well known in the microbial arts that microbes exposed to an reduced (energy) source enhance the pathway for the oxidation of that source and it is inherent that these microbes enhance plant growth and yield. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the method of Atmosphere as modified by Buckman et al. that when soil is exposed to H₂ (inherent in any soil exposed to the atmosphere) this exposure enhances the ability of soil microbes to oxidize H₂ which, inherently in turn, enhances plant growth or yield.

As to Claim 24, Atmosphere as modified by Buckman et al. further the H₂ generated by microbes (inherent in that most soil naturally contains species of rhizobacteria (Buckman et al. at page 131)).

Allowable Subject Matter

Claims 2, 3, 5, 8-15, 17, 20, 21, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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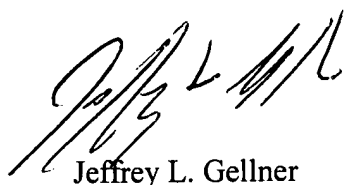
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Harris Jr. and JP4-2435589 disclose in the prior art various systems with generation of hydrogen gas. Yanohara and Potts disclose in the prior art various systems to pump gases into the soil.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Jeffrey L. Gellner whose phone number is 703.305.0053. The Examiner can normally be reached Monday through Thursday from 8:30 am to 4:00 pm. The Examiner can also be reached on alternate Fridays.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Peter Poon, can be reached at 703.308.2574. The fax phone numbers for the Technology Center where this application or proceeding is assigned are 703.305.7687, 703.305.3597, and 703.306.4195.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.1113.



Jeffrey L. Gellner